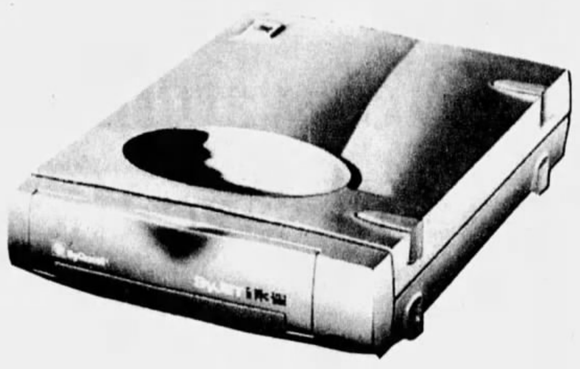
A whole new gig

Iomega's Jaz and Syquest SyJet's offer gigabytes of space on pocket-size disks

Page 22

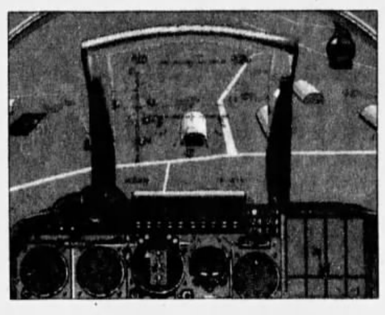


Tech

High sticking

New combat flight simulators take gaming to new heights

Page 23



Business

Calendar 26
Digest 25

Net directory 22
Hi tech careers 25

Free speech is coming to Singapore, electronically

By T.R.REID and BRIT HUME

SINGAPORE — The personal computer is one of the most powerful tools ever devised to enhance personal freedom. This simple truth is causing problems for repressive governments everywhere. A visit to the rich, high-tech island nation of Singapore makes it clear why autocrats hate the Internet.

The powerful clique running this highly regimented city-state of 3 million at the southern tip of the Malay Peninsula likes to control every aspect of daily life. Police stand atop tall buildings with binoculars to spot people guilty of such crimes as littering, chewing gum, or selling Playboy magazine.

The mass media are licensed by the government — and they give strong editorial support, not surprisingly, to just about anything the government chooses to do. Writers who criticize, in contrast, are routinely hauled into court on various charges. Publications that print criticism tend to be banned.

And yet, this same Singapore is a thoroughly up-to-date nation with a well-educated populace, modern infrastructure and a world-class financial industry. It has a high rate of personal computer ownership. The number of Internet subscribers is growing explosively; there is intense demand for more access links. You can see shiny new "Internet Cafes" all over Singapore — sometimes right next door to ancient, dusty mahjong parlors.

But with more and more Singaporeans gaining access each day to the vast ocean of information and opinion on the Net, the government has become frightened that it can no longer control what its citizens read, think and write.

The column you are reading right now, for example, could probably never be printed in any periodical sold in Singapore, because of the threat of legal action.

But once this column gets to the Internet, it will be readily available for Singaporeans to read, download and (dare we say it?) print. That is to say, the personal computer is bringing the glory of free speech to countries that have never much liked the idea.

This spring, the government here outlined what it called an "anti-pollution" drive designed to gain control of the words and pictures moving on the bit stream.

This is designed to block transmission into Singapore of dirty pictures and suggestive text as well as other so-called "objectionable material." What that latter term means is not spelled out, but some Netheads we talked to in Singapore said the meaning is obvious to any citizen: No political criticism.

The unanswered question is how Singapore, or anybody else, expects to

Please turn to Page 22

THE BROWSER WARS

Microsoft's Bill Gates has set his sites on the World Wide Web and those upstarts from Netscape. This is one battle he can't afford to lose.

Billionaire Bill Gates plans to put Microsoft's muscle behind the new Internet Explorer, and has already brokered deals with America Online and CompuServe.

By KEVIN M. SAVETZ

If you're one the millions of people surfing the Internet, chances are pretty good that the program you're using to move around out there, the browser, as we say, is Netscape Navigator. The best estimates tell us that Navigator accounts for more than 80% of the Internet browsers in use. And it's no wonder. Navigator does for the Web what peanut butter does for celery; it takes something that's good on its own and adds a new level of excitement and purpose.

There wasn't any competition, until recently. Oh sure, other browsers existed, but thanks to clever programming and aggressive marketing at Netscape, none of the other programs came close to the reputation of Navigator.

As interest in the Internet burgeoned, why, it looked like this tiny California company had the future all to itself.

That prospect seems to have made Bill Gates uncomfortable.

Gates, of course, is chairman of the Microsoft Corporation and the dominant force in the software industry. Comparing him and his company to Netscape prompts writers to dust off the ultimate in the way of underdog imagery. David versus Goliath, and so forth. Last year, Microsoft had sales near $6 billion and more than 17,000 employees, while Netscape's sales were a mere $80 million or so, its payroll only 600. Combative as the biblical hero, Netscape executives Jim Clark and Mark Andreessen spoke of taking it all away from Gates.

Jim Clark
Netscape's business brain

Which plainly didn't help Gates's mood at all.

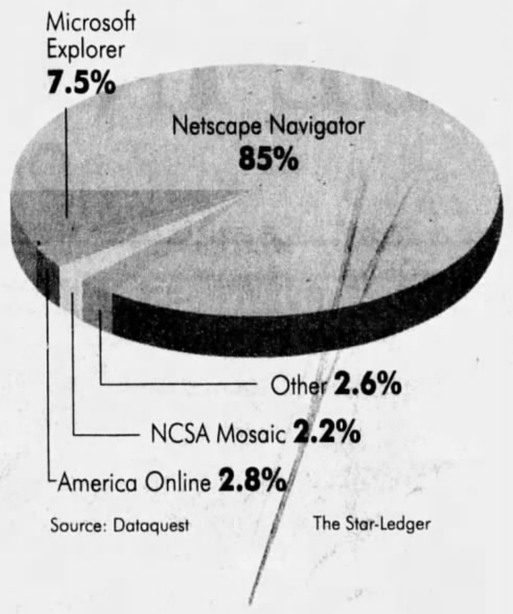
Now Microsoft is on the attack, lumbering forward relentlessly against its much nimbler opponent. The Microsoft browser for the Internet, called Explorer, is starting to gain acceptance. Sentimentalists will always root for David in this classic matchup. But in the cold-hearted world of Wall Street, there's been a lot of money going down on Goliath, of late.

At Dataquest, the global technology research firm in San Jose, California, director and senior analyst Allen Weiner believes Microsoft is on the right track. Dataquest reports that Microsoft Explorer controls only 7.5 per cent of the market for browsers, as of now. By year's end, that percentage could quadruple, Weiner says.

"There's a lot of momentum toward the Microsoft Internet Explorer right now," Weiner said. "Microsoft is doing quite a bit to leverage its dominant position with office software, programs like Excel and Powerpoint, for instance, dovetailing them with the browser, and also leveraging its dominant position with the Windows operating system. And we feel all of that is going to

Please turn to Page 24

Usage of browser software on the Internet:



Source: Dataquest The Star-Ledger

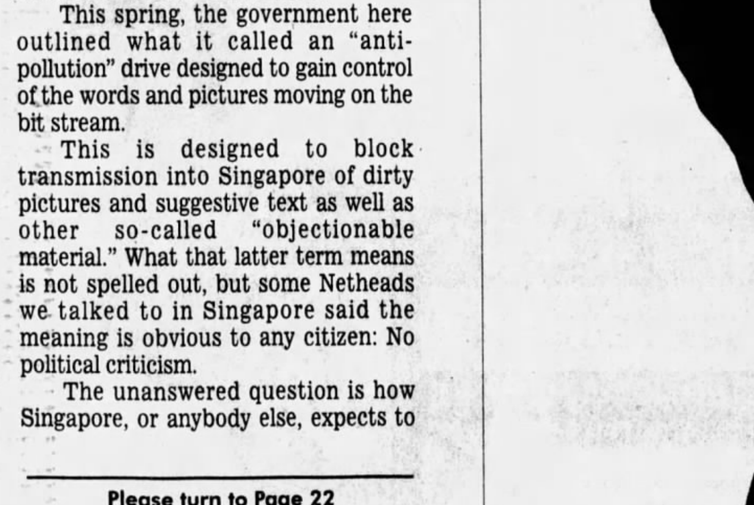


Photo by Steve Andrascik

James E. Carnes, President and Chief Executive Officer of the David Sarnoff Research Center in Princeton.

Defining the future of television

A Q&A on the controversy swirling around HDTV technology

By KEVIN COUGHLIN

Few acronyms in the tech world enflame passions like HDTV. "High-Definition Television" offers dramatically sharper, wide-screen pictures with CD-quality sound and extra data like sports stats, by transmitting signals digitally. What's so controversial?

First of all, consumers will have to spend about $1,500 more for a digital TV. More importantly, broadcasters will need extra frequencies to transmit the signal. With all the electronics clogging up the airwaves these days, and more on the way, any discussion about use of remaining open frequencies tends to generate a lot of heat.

Congress is debating whether broadcasters should pay for this additional broadcast "spectrum." Senate Majority Leader Bob Dole, destined to be the GOP presidential nominee, has said that giving every station in America a free second channel would amount to "corporate welfare." He prefers auctioning the frequencies to the highest bidders it's estimated this could raise between $10 billion and $70 billion. The National Association of Broadcasters has opposed the auction as a "TV tax" in a national TV ad campaign.

It looks like the TV lobby will win. More hearings are planned, but congressional sources concede the matter probably will be left to the Federal Communications Commission. The FCC supports giving broadcasters the extra digital spectrum for at least 15 years, and re-claiming their analog frequencies once everyone has made the switch to digital. Then the auction debate would begin anew over the analog spectrum.

President Clinton is going along with the industry, to an extent. He supports free use of the digital frequencies, with an auction of the analog frequencies in 2002.

The FCC should approve two experimental HDTV licenses for Washington-area stations later this year, a

Please turn to Page 26

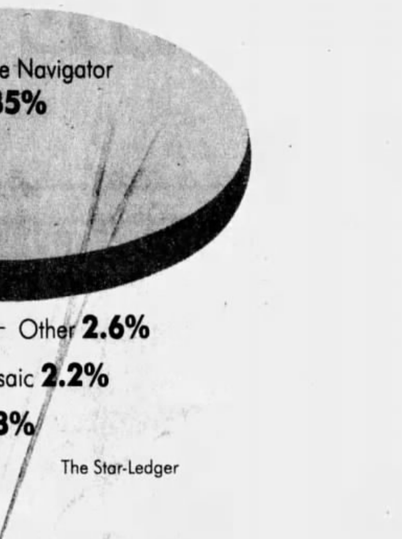
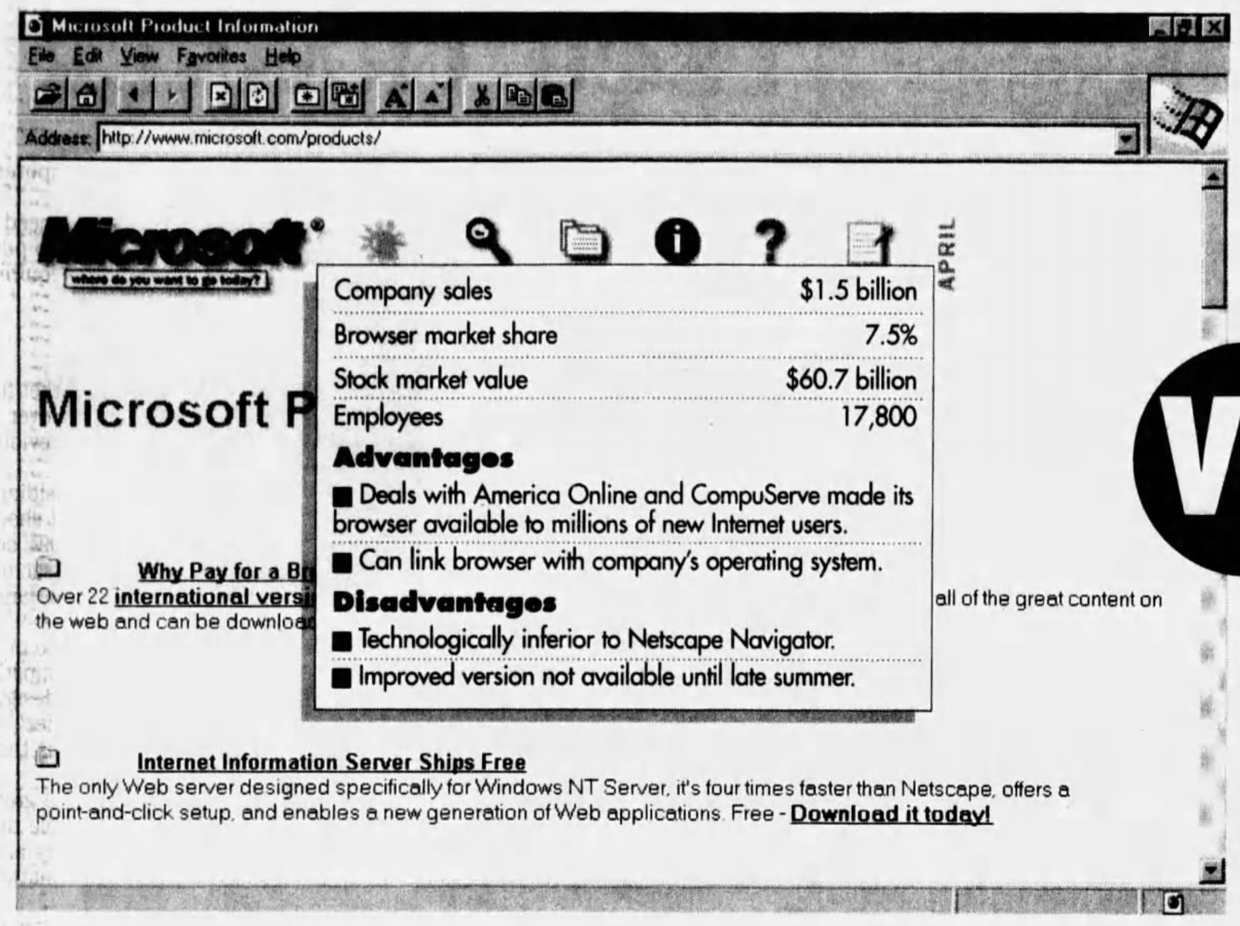
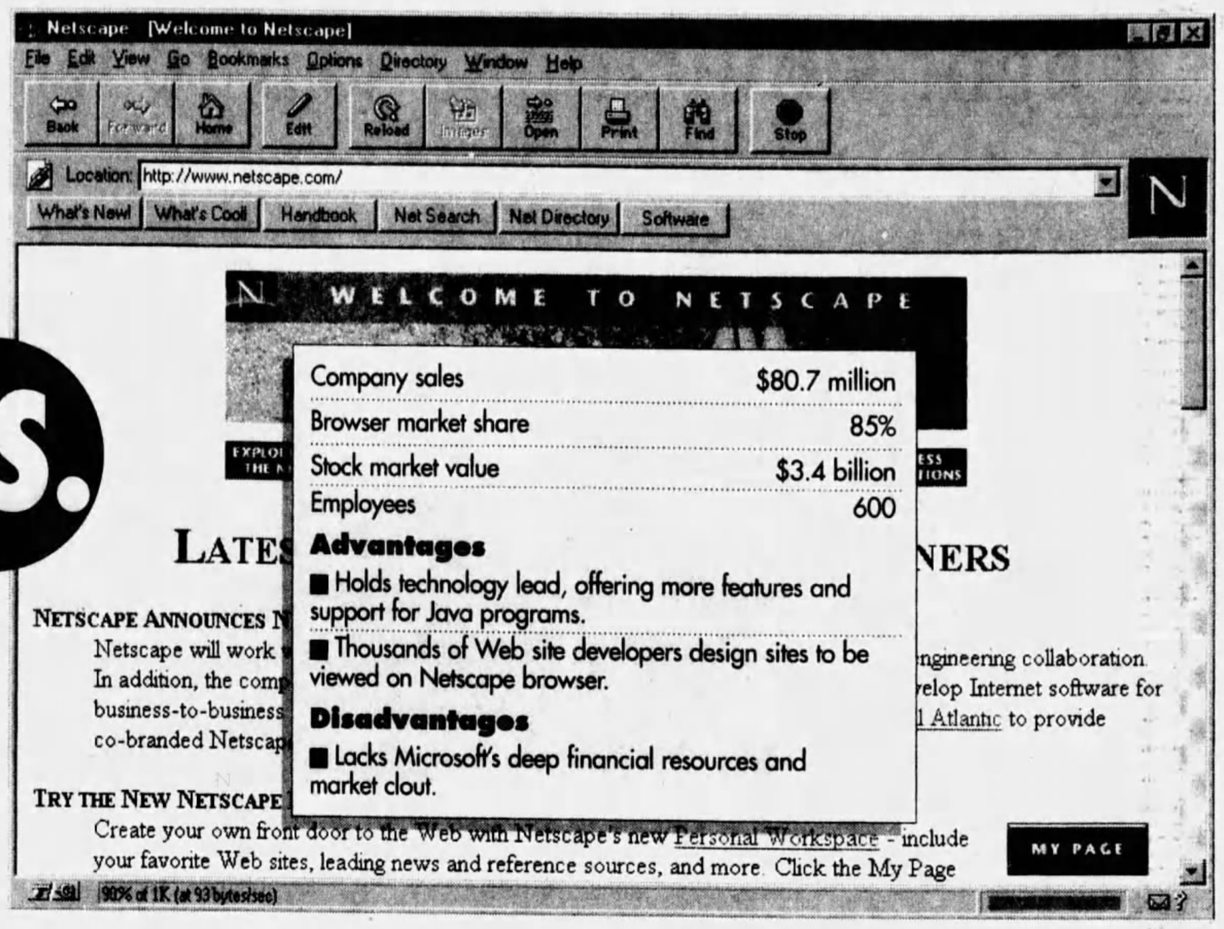


Photo by Mark Abraham

Gigi Sohn, Deputy Director of the Media Access Project.


Microsoft Product Information
File Edit View Favorites Help
Address: http://www.microsoft.com/products/
Microsoft
where do you want to go today?
APRIL
Company sales $1.5 billion
Browser market share 7.5%
Stock market value $60.7 billion
Employees 17,800
Advantages
■ Deals with America Online and CompuServe made its browser available to millions of new Internet users.
■ Can link browser with company's operating system.
Disadvantages
■ Technologically inferior to Netscape Navigator.
■ Improved version not available until late summer.
Why Pay for a Br
Over 22 international versi
all of the great content on
the web and can be downloa
Internet Information Server Ships Free
The only Web server designed specifically for Windows NT Server, it's four times faster than Netscape, offers a point-and-click setup, and enables a new generation of Web applications. Free - Download it today!

VS.


Netscape [Welcome to Netscape]
File Edit View Go Bookmarks Options Directory Window Help
Back Forward Home Edit Reload Images Open Print Find Stop
Location: http://www.netscape.com/
What's New! What's Cool! Handbook Net Search Net Directory Software
WELCOME TO NETSCAPE
Company sales $80.7 million
Browser market share 85%
Stock market value $3.4 billion
Employees 600
Advantages
■ Holds technology lead, offering more features and support for Java programs.
■ Thousands of Web site developers design sites to be viewed on Netscape browser.
Disadvantages
■ Lacks Microsoft's deep financial resources and market clout.
LATES
NERS
NETSCAPE ANNOUNCES N
Netscape will work
In addition, the comp
business-to-business
co-branded Netscap
ngineering collaboration
velop Internet software for
l Atlantic to provide
TRY THE NEW NETSCAPE
Create your own front door to the Web with Netscape's new Personal Workspace - include your favorite Web sites, leading news and reference sources, and more. Click the My Page
MY PAGE
90% of 1K (at 93 bytes/sec)

Bill wants bigger bite of browser biz

Continued from Page 21

make a difference.

"Our belief is that Microsoft could well have 30 percent of the market share for browsers by the end of the year."

In the browser wars, the stakes for both companies are sky high. Both suspect that a single software standard will dominate the PC desktop in the emerging age of the Internet. Should a single company get control of the standard, that company may well gain software sales running into the billions, as desktop applications are adapted for use with Internet connections.

Both Microsoft and Netscape are working toward a future where the desktop connects to the Internet routinely. An executive preparing a report on a competitor's sales, for example, might reach out through the Internet to pull in financial data on the competitor, then make a chart with the data and insert it in her report, all without leaving her word-processing application. A golfer looking for a new set of clubs might shop around the Internet for the best price, order the clubs, pay the bill, and then balance his checkbook from the same desktop application.

A chance to set standards

Both Netscape and Microsoft believe that market share for Internet browsers is the key to leverage on the standards, and that leverage on standards can be translated into sales of software. Analysts agree.

"The Web browser that captures the market share will be the one that sets the standards," says Ira Machefsky, an analyst with Giga Information Group in San Jose, Calif.

The key function of the Internet browser is managing how materials are presented on computers. Internet materials of all kinds - text and photos, video and sound - are stored on powerful "host" computers. With the materials are stored sets of instructions describing how the materials should be presented. The instructions are written in a simple code called HTML, for Hypertext Markup Language. The HTML code attaching to a line of text might identify that text as a headline, for example. Another piece of HTML code might position a photo in the middle of a screen. Yet another might link one document to another. It is the responsibility of the browser to interpret all the HTML code and to follow the HTML instructions in presenting materials.

The HTML system for formatting and linking documents is the foundation for the point-and-click aspect of the Internet known as the World Wide Web. Formal control of the HTML standards rests with an international commission dominated by academics and scientists. But practical control is another matter. Recently, its great strength in the marketplace has allowed Netscape to adapt HTML standards on its own. So influential has the company become, its changes in HTML vocabulary have been widely accepted and emulated by other browser companies, including Microsoft.

Netscape has enjoyed a lead in browser technology since the company was formed in 1994. That lead was based on the experience of Marc Andreessen. As a student at the University of Illinois in 1993, Andreessen helped put together the first Web browser, a program

'The Internet and Netscape are really the first thing that has come along that had the potential to make Microsoft irrelevant, and it has taken them a while to adjust.'

— Hubert Delany, analyst

called Mosaic. The World Wide Web was born with the release of Mosaic by the National Center for Supercomputer Applications (NCSA), an agency of the U.S. government. After he and Clark formed Netscape, Andreessen kept pushing the technology forward, while Clark built the business.

Over the last year, Netscape has put more and more pressure on Microsoft. First Netscape announced a deal with Sun Microsystems that will enable Netscape to use Sun's Java programming language, particularly the Java interpreter, which Netscape has now built into the Navigator browser. The presence of the interpreter in the browser enables the browser to download from the Internet and run any number of programs written in the Java language. The programs need not be modified for different computer platforms, as is usually necessary; the same version can run on any machine where an interpreter is present. Or, to use the jargon of Java, any "virtual machine."

Microsoft outmanuevered

The Java deal threatened Microsoft in a way Microsoft had not anticipated. It suggested that, in the future, desktop software may not be purchased on disk and updated with new purchases on disk. Rather, use of the Java language would allow companies to maintain just a few master copies of desktop programs on Internet host computers. Users would "subscribe" to the software. Whenever they needed to use it, they would download the latest version. All the programs would be written in Java. And many of them would be owned by Netscape.

Microsoft countered by striking its own deal to license Java and by licensing rights to a browser developed by Spyglass Inc., of Naperville, Ill. Within months, the Spyglass browser had been repackaged as Microsoft Explorer.

Just last month, Netscape and Microsoft collided in negotiations for distribution of browser software through online services. First Microsoft announced a deal with Compuserve. Then Netscape announced a Compuserve deal. On March 11, Netscape announced that its software would be available through America Online, the largest of this country's online services, with more than 5 million subscribers. In describing their deal, the companies used the term "alliance," suggesting a Netscape coup.

But the very next day, Microsoft and AOL announced an even closer relationship. AOL said that Microsoft Explorer would be not merely available to download, like Navigator, but "bundled" or packaged with AOL software, so that all new AOL members (AOL claims to add about 300,000 a month) would have Explorer on hand. For its part, Microsoft promised to build into its software buttons that would connect users to AOL. Adding insult to injury, AOL described Microsoft as its "primary technology partner in the Internet space."

Netscape dismissed that AOL comment as "hype", but could not obscure its importance. While Netscape remains in a strong position, in terms of alliances - it has agreements with Internet service providers PSI, AT&T, and Netcom - the AOL announcement established Microsoft as a strong competitor on the Internet.

"It sounds to me like Microsoft won first prize, and Netscape got the consolation prize," said David Folger of the META group in Connecticut, in reference to the online deals.

The big giveaway

Microsoft has remained on the attack. Determined to promote Explorer, it has been giving away copies of the program. Netscape has always provided temporary copies of Navigator over the Internet, but has charged $50 or so for permanent copies.

Meantime, Microsoft is also giving away its Web server program, the program that manages the activities of the Internet's powerful host computers. Netscape had been selling its server software for as much as $5,000 a copy, but has now been compelled to cut the price of that high-end server software from $5,000 to $295.

Netscape turned its first quarterly profit in the quarter that ended in September, earning $1.4 million, and increased that to $2.4 million in December. But now most of its revenue sources are under pressure from Microsoft.

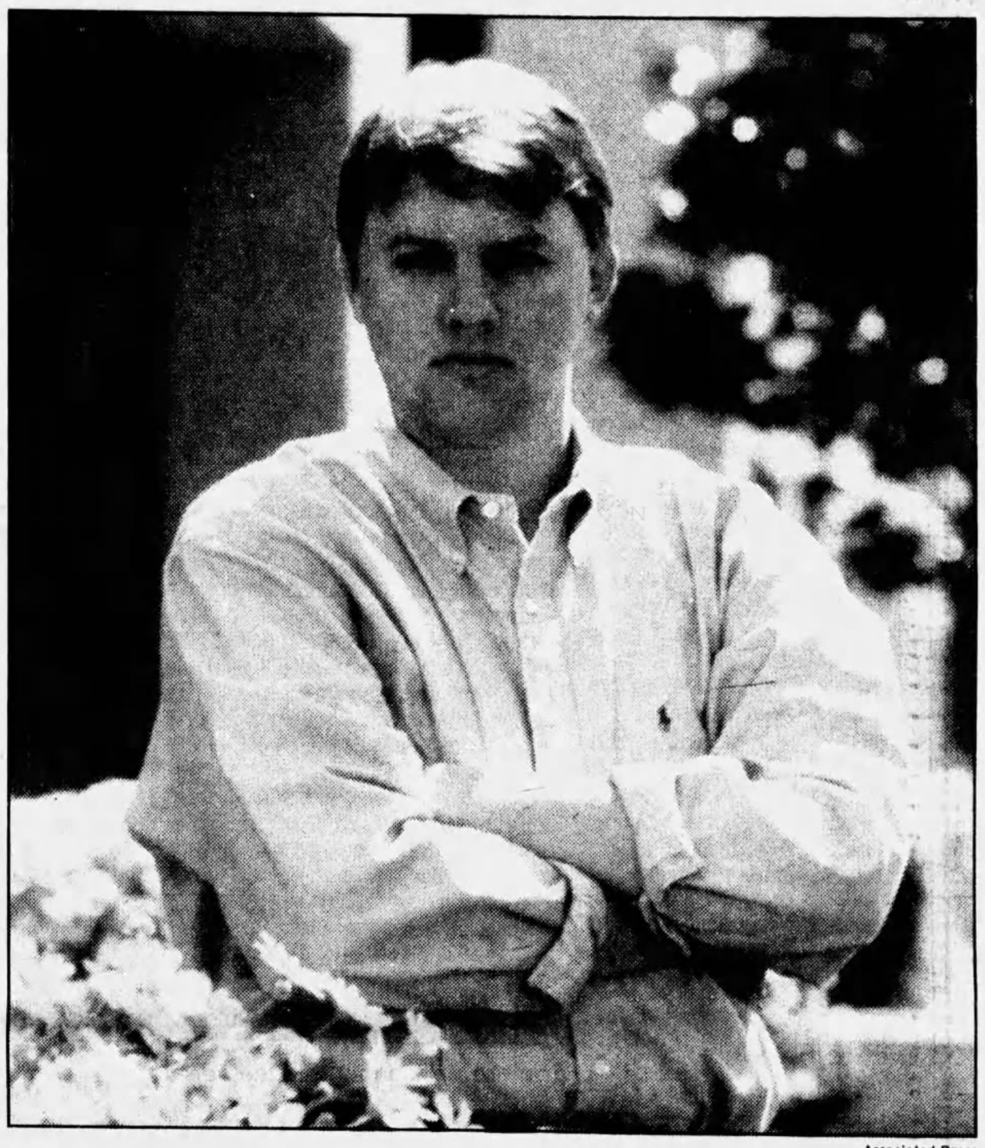
Microsoft denies is it trying to drive Netscape from the browser market, but the company has made it clear that it doesn't like playing second fiddle, either. "Majority browser share is certainly our goal," Gates has said.

The drift of the competition will have important consequences for Internet users. The two companies have different goals. Should Netscape and Navigator prevail, users can expect a desktop environment built around Java. In this environment, the browser would function as a kind of ringmaster for spreadsheets, word processing programs, and other applications stored on the Internet. The role of the browser would be paramount. Very likely, the role of Microsoft in software development would be diminished.

Should Microsoft get the upper hand, the desktop will likely be a little more familiar than it would in a Netscape future. Microsoft would rely on a proprietary software system called ActiveX to establish connections between the Internet and programs like Excel and Word. ActiveX can work with Java programs, if necessary. Under this scenario, most users would continue to work with applications they're used to. Microsoft says that's a big advantage for users.

Differing strategies

With these different goals in mind, the companies have developed different strategies. So far, Netscape has poured all of its resources into the browser itself. Netscape hopes that technological progress on the browser - with addition of sound and video and so forth - will be so rapid Microsoft will never be able to catch up. "If we stay six months ahead of everybody else, I'll be happy," said Netscape's Clark.



Associated Press

Marc Andreessen, who worked on the first World Wide Web browser, Mosaic, is the technical genius behind Netscape Navigator and has become one of America's newest multi-millionaires.

As of today, that's about where Netscape stands. Navigator is clearly the superior product, much more versatile than Explorer and much easier to adapt to the multimedia aspects of the World Wide Web. Version 3.0 of the Explorer software, due out in the fall, is said to match the capabilities of Navigator 2.01, the browser Netscape is now distributing. But by fall, Navigator will very likely have moved ahead again.

If Netscape's strategy is to stay out in front, Microsoft's is to surround Netscape. While Netscape concentrates on the browser, Microsoft is advancing on all fronts, building Internet content of its own, providing access through Microsoft Network, and developing the browser at the same time. In connection with the browser, Microsoft seems to be shadowing Netscape. It has been copying all of Netscape's major moves with Navigator.

"This has been a game of containment for them," analyst Hubert Delany said of Microsoft. Delany is with the Gartner Group in Connecticut. "I don't think they're playing the game to win right now. And the reason is that the Internet and Netscape are really the first thing that has come along that had the potential to make Microsoft irrelevant, and it has taken them a while to adjust."

Delany believes that Microsoft's deals with AOL and Compuserve will prove important, because new computer users will tend to utilize the first browser they get their hands on. More experienced "power users" will tend to stick with the more sophisticated capabilities of Netscape, Delany said. He suggested that Microsoft cannot afford to delay release of Explorer 3.0 or the bundling of Front Page software with Explorer, now scheduled for late fall. The Front Page software, acquired by Microsoft with its purchase of Vermeer Technologies, will give Explorer many of the user-friendly capabilities for Web document production now found only in Nevigator.

Will Netscape survive?

If all goes well for Microsoft, the company might pick up as much as 50 percent of the market for browsers by the end of 1997, Delany said. He does not see Microsoft wiping Netscape off the map, unless Netscape runs into fundamental problems with the Java programming language. Java has encountered some security problems, but Netscape insists none are a long-term threat.

"These two companies pretty much decided to try to destroy one another," Delany said. "Now both have found that the other is very strong in its own area. Netscape is very strong in the browser area, and is not going to be easily uprooted there. And Microsoft is very strong in the desktop area, and will use that to its advantage. So I think you're probably looking at a two-browser market, for a time."

Kevin Savetz (http://www.northcoast.com/savetz/) is author of MBONE: Multicasting Tomorrow's Internet, published by IDG books.

Computer facing The Zero Factor? We'll worry about that next year

By WAYNE RASH JR.

Anything Rash

"Jeez."

My wife looked up from the newspaper she was reading, worried, and continued, "Do you think it will affect our copy of Quicken?"

She was reading part of a series I'd written for The Washington Post. The series discussed the possibility that catastrophe awaits many of the computer systems we entrust with our daily business chores. The problem is that the designers of the programs that run on these computers never anticipated that the programs would still be in use at the end of the 20th century. Now it seems that the end is indeed nearly here, and in fact only about 44 months away.

I answered the only way I could.

"Darned if I know," I said, "but we don't have to worry about it now."

My wife went back to reading the paper, and I went to the office to check my e-mail. There was a lot. About half was somehow related to the article about the year 2000 and its effect on computer systems. Of the letters I got, about half pointed out that 2000 is really the end of the current century, and that the new one doesn't start until 2001. I was glad I had a delete button on my e-mail system.

The other half were divided between people who were worried about what would happen to their credit cards and people who were asking about Quicken. I reflected on the apparent dependence of large numbers of people on one piece of software, and on the resulting power of Intuit, makers of the Quicken checkbook program.

To the credit card holders, the only recommendation I could give was to ask the bank. I noted that many banks are working hard to have their computers ready to handle the new dates, but that not all would make it in time.

Obviously, these people had a legitimate concern. Their finances could end up in real trouble if their banks didn't make provisions for the change in dates on Jan. 1, 2000. They could find themselves late on payments even when they weren't, for example. The reason is that most computer software, especially the software that runs on the big mainframe computers used by banks, utility companies and the government, only pays attention to the last two numbers in a date.

To them, 1996 only appears as "96." Which works fine until the end of the century, when the number suddenly becomes "00." Depending on the computer, that could just as easily mean the year 1900. So, suddenly, you'd be 99 years late on your car payment.

Fortunately for Quicken users, the answer seems to be that there's no problem. The software, according to the tech support guy I talked to, can handle the date change just fine. Unfortunately, there's no way to extend that assumption to other software. Worse, even if your computer at home and all of the software you use works perfectly, you're not out of the woods.

Unfortunately, nearly everything you use that makes use of a computer somewhere else could be affected. Are you sure that your bank account will be handled properly? What about your retirement account? Your credit cards and installment loans?

I was talking to one computer system manager about the problem, and his response was, "Hey, no problem, Jan. 1 first comes on a Saturday that year, so we'll fix it over the weekend."

I thought about the thousands of programs a company of any size must have, and the hundreds of hours it would take to even find out how big the problem was, much less fix the problem. After about 20 minutes, I called and transferred my retirement account to a different financial services company.

Even the government is bothered by the problem. Most agencies say that they don't have the money or staff to fix the problem. They're not sure *what* they're going to do. There are exceptions, of course. The Social Security Administration has been dealing with this for a long time and has already devised a solution. The other agency that's solving its problems is, as you'd expect, the Internal Revenue Service. So, no matter what sort of snafus you run into with money as the date changes, you'll still get to pay your taxes.